

IN THE CLAIMS

1. (Currently Amended) An optical apparatus comprising:
a light-exclusion member for shielding a passing luminous flux passing along an optical path;
first driving means for ~~back-and-forth~~ moving the light-exclusion member back and forth relative to the optical path;
a light-attenuating member for reducing an amount of a passing luminous flux passing along the optical path; and
second driving means for ~~back-and-forth~~ moving the light-attenuating member back and forth relative to the optical path,
wherein one of the first and second driving means is ~~arranged so as to pile up on~~ stacked upon the remaining one of the first and second driving means.
2. (Currently Amended) The optical apparatus according to Claim 1, wherein the first and second driving means is ~~arranged so as to pile up~~ relative to the ~~first driving means~~ are stacked in an optical-axial direction of the optical path, and the light-exclusion member and the light-attenuating member are arranged closer to the first driving means in comparison to the second driving means.
3. (Currently Amended) The optical apparatus according to Claim 1, wherein the first and second driving means each have a central axis, said first and second driving means being is arranged so that the their central axis, axes are coaxial around which the light attenuating member of the second driving means is rotationally driven, is coaxial with the central axis, around which the light-exclusion member of the first driving means is rotationally driven.
4. (Currently Amended) The optical apparatus according to Claim 1, ~~wherein further comprising at least one rotational shaft for rotatably supporting the light-exclusion member and the light-attenuating member are rotatably mounted upon a common shaft, commonly.~~

5. (Currently Amended) An optical apparatus arranged within a A lens device having a movable lens and an optical apparatus for shielding and attenuating passing light, the optical apparatus comprising:

a light-exclusion member for shielding passing light;

first driving means for back and forth moving the light-exclusion member back and forth relative to an optical path;

a light-attenuating member for attenuating the passing light;

second driving means integrally piled up on placed upon the first driving means for back and forth moving the light-attenuating member back and forth relative to the optical path; and

a case member having an opening for passing light, in that the said light-exclusion member and the light-attenuating member being supported arranged on the case member so as to back and forth move back and forth relative to the said opening, and the first driving means and the second driving means integrated with each other being arranged to one side of said sideward the opening so that the piling up direction thereof is in longitudinal axes of said first and second driving means are parallel with the an optical axis of the optical path, and

wherein one of shafts for a shaft in said lens device supporting the lens for slidable movement along movably in the optical axial direction is arranged sideward the axis, said shaft being positioned to one side of said opening and within the lens device so as to pass through the vicinity of the first driving means and the second driving means which are integrated with each other.

6. (Original) A camera comprising the optical apparatus according to Claim 1.

7. (Currently Amended) An optical apparatus comprising:

a plurality of light-exclusion members for shielding an opening for passing a photographing luminous flux therethrough in eoneert therewith; and

driving means disposed adjacent to escape positions of the light-exclusion members which are displaced from said opening for rotating the plurality of light-exclusion members between the said escape positions escaping displaced from the opening and shielding positions shielding the opening,

wherein the said plurality of light-exclusion members, each having an engaging hole to be commonly brought into for engagement with one of a common drive retainers retainer of the driving means for driving the light-exclusion members about coaxially about a common rotation center, are said light-exclusion members being overlapped therewith at the their escape positions and are rotated through different angles from the their escape positions to the their shielding positions by an angle different from each other in the same direction so as to divisively shield the said opening.

8. (Currently Amended) The optical apparatus according to Claim 7, wherein the a front edge of the light-exclusion member, which has a minimum rotational rotates through a smaller angle moving from the its escape position to the its shielding position for solely shielding an a portion of said opening portion located else closer to the escape position positions among of the plurality of light-exclusion members, has a shape running parallel to the which conforms with an edge of the opening portion located else closer to the escape position positions when in a state that the light-exclusion member which rotates through said smaller angle is located at the its escape position; while the a front edge of the light-exclusion member, which has rotates through a maximum rotational larger angle from the its escape position to the shielding position for solely shielding, to the exclusion of the light-exclusion member which rotates through a large angle, an a portion of said opening portion located distant further away from the escape position positions of said among the plurality of light-exclusion members, has a shape running parallel to which conforms with an edge of the opening portion located distant further away from the escape position positions in a state that when the light-exclusion member which rotates through a greater angle is located at the escape shielding position.

9. (Original) A camera comprising the optical apparatus according to Claim 7.

10. (Currently Amended) An optical apparatus comprising:
an opening ~~a~~ member having an opening for passing a luminous flux therethrough;
a drive pin driven by a driving source;
a leading shutter blade having a cam hole receiving said pin, said pin that is brought into engagement with the drive pin that drives driving the leading shutter blade for selectively opening and shutting the shielding said opening; and
a trailing shutter blade having a hole with a clearance receiving said pin, that is brought into engagement with the drive said pin rotating said trailing shutter blade after the leading shutter blade is moved through a given angle, the drive pin driving the trailing shutter blade for opening and shutting the opening.

11. (Currently Amended) An optical apparatus comprising:
an opening ~~a~~ member having an opening for passing a luminous flux therethrough;
a drive member driven by a driving source;
~~two first and second~~ shutter blades for selectively opening and shutting shielding the opening;
~~first~~ shutter-blade driving means driven by a driving force from ~~the said~~ drive member for driving ~~one of the two said first~~ shutter blades blade; and
~~second~~ shutter-blade delay driving means driven by a driving force from the drive member for driving ~~the other of the two said second~~ shutter blades blade after ~~the one said first~~ shutter blade is moved a given distance.

12. (Currently Amended) The optical apparatus according to Claim 11, wherein ~~the said first~~ shutter-blade driving means ~~is comprises~~ cam means disposed between ~~the~~ said drive member and ~~the one~~ said first shutter blade.

13. (Currently Amended) The optical apparatus according to Claim 11, wherein ~~the said second~~ shutter-blade ~~delay~~ driving means comprises ~~a drive pin provided in the drive member and a hole provided in the other~~ said second shutter blade that ~~is engaged with the~~ receives a drive pin forming part of said drive member, ~~the~~ said hole having a clearance region extending in formed along a moving direction of movement of the drive pin.

14. (Currently Amended) A shutter device comprising:

a shutter blade movable between a first and second end positions for selectively opening and closing said shutter device; and
a member formed of shock absorbing material arranged out of displaced from a movement trajectory of the shutter blade moving between said open and closed position for suppressing bounding of said blade.

15. (Original) A device according to Claim 14, wherein the shutter device is a lens shutter device.

16. (Original) A shutter device comprising:

a shutter blade; and

a shock absorbing material arranged out of a movement trajectory of the shutter blade in a displacing direction of the shutter blade displacing by deflection during movement of the shutter blade or immediately after the movement thereof in a direction substantially perpendicular to a moving direction of the shutter blade.

17. (Original) A device according to Claim 16, wherein the shutter device is a lens shutter device.

18. (Original) A shutter device comprising:

a shutter blade; and

a shock absorbing material arranged in a vicinity of a movement trajectory of the shutter blade and in a displacing direction of the shutter blade displacing by deflection of the shutter blade due to the movement of the shutter blade.

19. (Original) A device according to Claim 18, wherein the shutter device is a lens shutter device.

20. (Original) A shutter device comprising:

a shutter blade;

a guide unit for guiding deformation of the shutter blade when the shutter blade is temporarily stopped or finishes the movement of the shutter blade; and

an absorbing member for absorbing kinematic energy of the shutter blade by abutting the shutter blade by the deformation of the shutter blade produced by the guidance.

21. (Original) A device according to Claim 20, wherein the shutter device is a lens shutter device.

22. (New) A lens device comprising:

a shaft;

a lens assembly mounted for slidable movement along said shaft and having a lens for focusing light reflected from an object and passing along an optical path which substantially coincides with an optical axis of said lens;

a device positioned along said optical path and having an opening aligned so that a center of said opening is substantially coincident with said optical axis;

said device having a light shielding assembly and a light attenuation assembly each being selectively movable to cover and uncover said opening;

a first drive means for driving said light shielding assembly and having a first drive member revolvable about a first central axis of said first drive means;

a second drive means for driving said light attenuation assembly and having a second drive member revolvable about a central axis of said second drive means;

one of said first and second drive means being arranged above the other of said first and second drive means so that said first and second central axes are substantially coaxial and are substantially parallel to said shaft.

23. (New) The device of claim 22 wherein said shaft and said first and second drive means are arranged to one side of said opening.

24. (New) A method for operating a lens device having rotatably mounted leading and trailing shutter blades positioned adjacent a light flux opening for passing light flux, said blades being movable between open and closed end positions and each having a blade opening provided with opening and closing edges, said method comprising:

inserting a pin into said blade openings;

moving said pin in a first direction so that, when said leading and trailing blades are in said open position and said light flux opening is uncovered, said pin engages the closing edge of the leading blade, moving said leading blade; and

continuing movement of said pin in said first direction whereby said pin engages the closing edge of the trailing blade after said leading blade has moved a given distance.

25. (New) The method of claim 24 further comprising:

providing a yieldable shock absorbing member for suppressing movement of at least one of said blades at said closed position.

26. (New) A method for operating a lens device having rotatably mounted leading and trailing shutter blades positioned adjacent a light flux opening for passing light flux, said blades being movable between open and closed end positions and each having blade openings provided with opening and closing edges, said method comprising:

inserting a pin into said blade openings;

moving said pin in a first direction so that, when said leading and trailing blades are in said closed position and said light flux opening is covered, said pin engages the opening edge of the leading blade;

moving said leading blade toward the opening position; and

continuing movement of said pin in said first direction whereby said pin engages the closing edge of the trailing blade after said leading blade has moved a given distance.

27. (New) The method of claim 26 further comprising:

providing a yieldable shock absorbing member to suppress movement of at least one of said blades at said open position.

28. (New) A lens device comprising:

a housing having a light flux opening coincident with an optical path for light flux;

first and second blade assemblies rotatably mounted in said housing and movable between first and second end positions for respectively covering and uncovering said light flux opening;

each of said blade assemblies having a driving opening;

a common drive pin extending through said driving openings for driving said blade assemblies between said first and second end positions;

a first suppression member in said housing displaced from a path of said first blade assembly for suppressing bounding of said blade when said first blade

assembly reaches said closed position and at least a free end of said first blade assembly is deflected to move in a direction of said optical path;

a second suppression member in said housing displaced from a path of said second blade assembly for suppressing bounding of said second blade assembly when said second blade assembly reaches said closed position and at least a free end of said second blade assembly is deflected to move in a direction of said optical path.

29. (New) The lens device of claim 28 wherein said first and second blade assemblies are each comprised of first and second blades, only a first blade of said first blade assembly having a free end capable engaging said first suppression member when said first blade assembly is in the closed position and only a first blade of said second blade assembly having a free end capable of engaging said second suppression member when said second blade assembly is in said closed position.

30. (New) The lens device of claim 28 wherein said first and second blade assemblies are each comprised of first and second blades, only a first blade of said first blade assembly having a free end capable engaging said first suppression member when said first blade assembly is in the open position and only a first blade of said second blade assembly having a free end capable of engaging said second suppression member when said second blade assembly is in said open position.

31. (New) A lens device comprising:

a housing having a light flux opening coincident with an optical path for light flux;

first and second blade assemblies rotatably mounted in said housing and movable between first and second end positions for respectively covering and uncovering said light flux opening;

each of said blade assemblies having a driving opening;

a common drive pin extending through said driving openings for driving said first and second blade assemblies between said first and second end positions;

a first suppression member in said housing displaced from a path of movement of said first blade assembly for suppressing bounding of said blade when said first blade assembly reaches said covering position and at least a free end of said first blade assembly is deflected to move in a direction of said optical path;

a second suppression member in said housing displaced from a path of said second blade assembly for suppressing bounding of said second blade assembly when said second blade assembly reaches said uncovering position and at least a free end of said second blade assembly is deflected to move in a direction of said optical path.

32. (New) The lens device of claim 31 wherein said first and second blade assemblies are each comprised of first and second blades, only a first blade of said first blade assembly having a free end capable engaging said first suppression member when said first blade assembly is in the uncovering position and only a first blade of said second blade assembly having a free end capable of engaging said second suppression member when said second blade assembly is in said closed position.

33. (New) A lens device comprising:

a housing having an opening coincident with an optical path for light flux; first and second blade assemblies rotatably mounted in said housing and movable between first and second end positions for respectively covering and uncovering said opening;

each of said blade assembly having a driving opening;

a common drive pin extending through said driving openings for driving said first and second blade assemblies between said first and second end position;

a first suppression member position in said housing displaced from the path of movement of said first blade assembly;

an inclined surface positioned inside said housing opposite said first suppression member for displacing a free end of said first blade assembly in a direction of said optical path and toward first suppression member when said first blade assembly reaches said covering position whereby said first suppression member suppresses bounding of said blade;

a second suppression member positioned in said housing displaced from a path of movement of said second blade assembly;

a second inclined surface positioned inside said housing opposite said second suppression member for displacing a free end of said second blade assembly in a direction of said optical path and toward said second suppression member when said second blade assembly reaches said covering position thereby enabling said second suppression member to suppress bounding of said second blade assembly.

34. (New) A lens device comprising:

a housing having an opening coincident with an optical path for light flux;

first and second blade assemblies rotatably mounted in said housing and movable between first and second end positions for respectively covering and uncovering said opening;

each of said blade assembly having a driving opening;

a common drive pin extending through said driving openings for driving said first and second blade assemblies between said first and second end position;

a first suppression member position in said housing displaced from the path of movement of said first blade assembly;

an inclined surface positioned inside said housing opposite said first suppression member for displacing a free end of said first blade assembly in a direction of said optical path and toward first suppression member when said first blade assembly reaches said uncovering position whereby said first suppression member suppresses bounding of said blade;

a second suppression member positioned in said housing displaced from a path of movement of said second blade assembly;

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a second inclined surface positioned inside said housing opposite said second suppression member for displacing a free end of said second blade assembly in a direction of said optical path and toward said second suppression member when said second blade assembly reaches said uncovering position thereby enabling said second suppression member to suppress bounding of said second blade assembly.